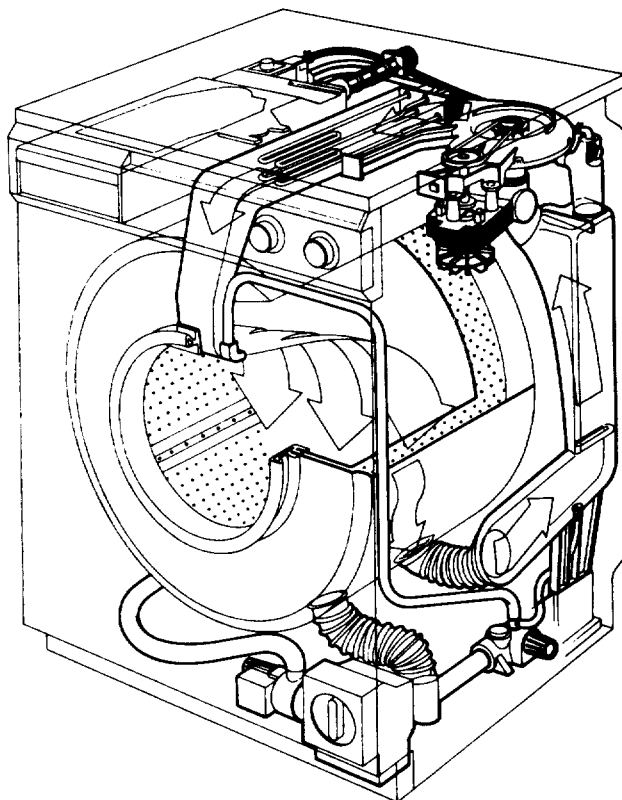


Service Manual

Washing
Lavage
Waschen
Lavaggio



P6000 series Washer-dryers



ITZ

Publication: 599 32 00-00

Date: 05/91

INDEX

	Page
Purpose of this Manual	4
DRYING CIRCUIT: OPERATING PRINCIPLES AND STRUCTURAL CHARACTERISTICS	
Drying circuit	6
Fan	8
Heater casing	9
Duct	10
Drying condenser	11
Hydraulic drying circuit	13
Jetsystem "Direct Spray" washing system	15
ELECTRICAL COMPONENTS	
Timer	19
Timers with timing devices: operating diagram	20
Dual-knob timers: operating diagram	22
ACCESS TO COMPONENTS	
Access from the top	27
Access from the rear shell	30
Access from the porthole door	33

PURPOSE OF THIS SERVICE MANUAL

This Manual is intended for use by service technicians who already have the basic training required for the repair of washing machines, and contains information relative to the drying system used in P6000 series washer-dryers (NEXUS line).

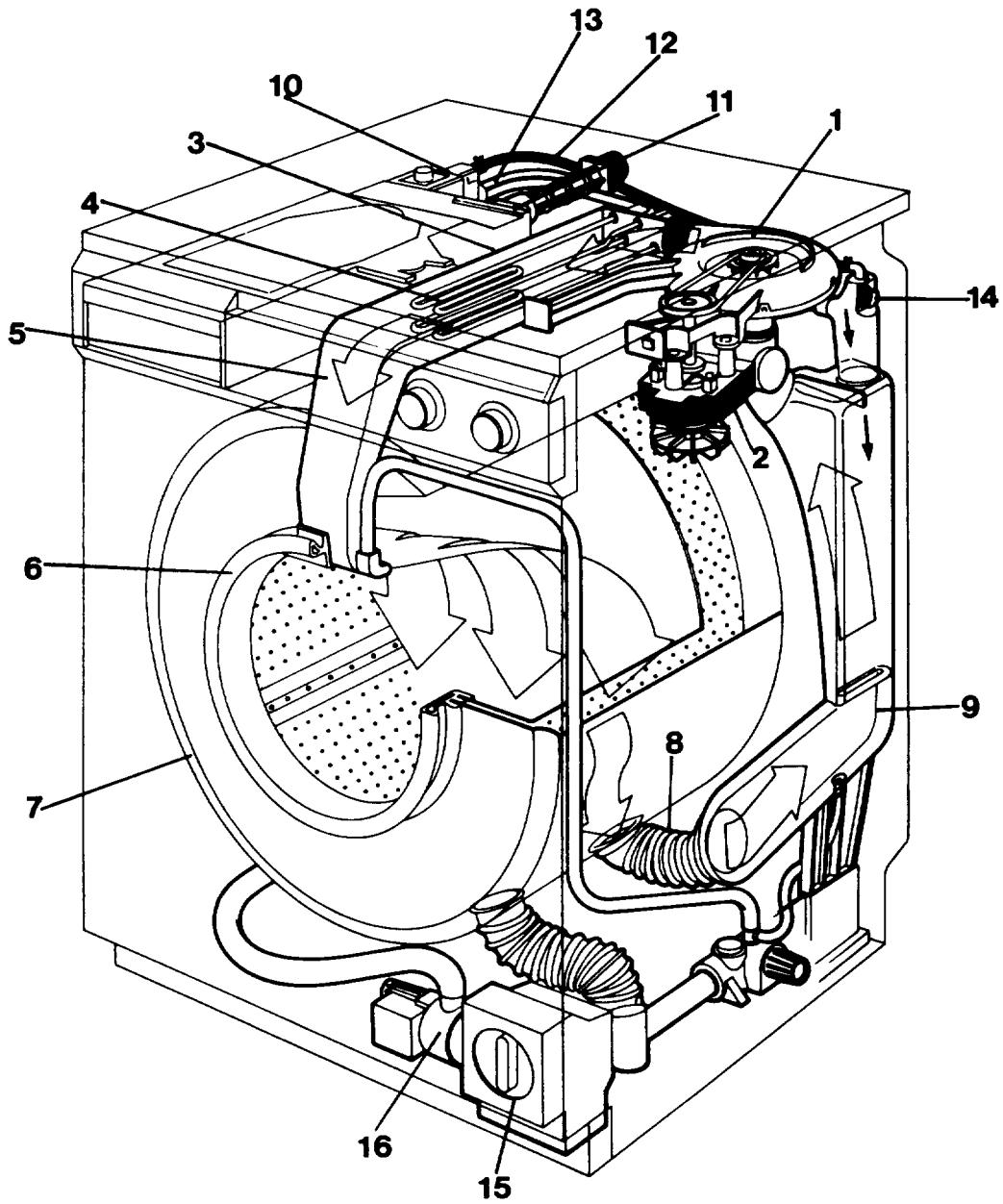
The structural characteristics and the washing system are described in Service Manual n° 599 31 74-50.

Separate Service Notes relative to each specific model contain more detailed information, such as:

- technical characteristics
- electrical diagrams
- timer diagrams
- exploded diagrams and spare parts lists

DRYING CIRCUIT
OPERATING PRINCIPLES
STRUCTURAL CHARACTERISTICS

DRYING CIRCUIT



- | | |
|--------------------------------|-----------------------------|
| 1. fan | 9. drying condenser |
| 2. fan motor | 10. manifold |
| 3. heating element casing | 11. solenoid valve |
| 4. drying heater | 12. condenser manifold hose |
| 5. duct | 13. vapor discharge hose |
| 6. bellows seal | 14. air-break |
| 7. tub | 15. filter casing |
| 8. tub-condenser coupling hose | 16. discharge pump |

The drying system is based on forced-air circulation with a water-jet condensation circuit. The drying capacity is approximately half the maximum load of dry washing. If a full load is washed, then drying must be carried out in two stages. However, if a half-load is washed, the drying cycle can be set to start automatically at the end of the washing cycle.

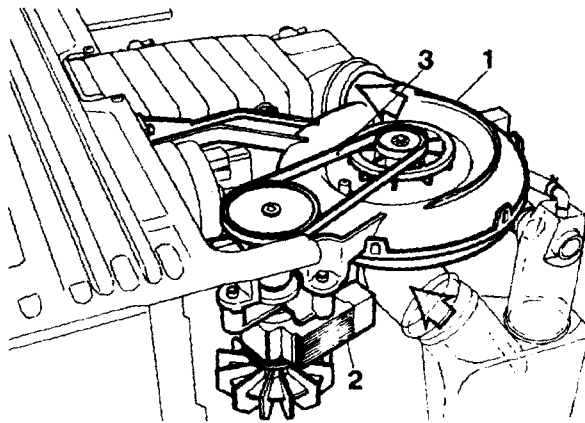
During the drying phase, the drum rotates at low speed in alternate directions. The air is warmed by the heater and ducted by the fan to the interior of the drum, where it removes the humidity from the damp washing.

When the jet of cold water comes into contact with the humid air, the resulting heat exchange causes the humidity to condense. The cooled, dry air is redirected to the fan, reheated by the heater and is then recirculated into the drum.

The cooling water and condensation are drained off by the discharge pump.

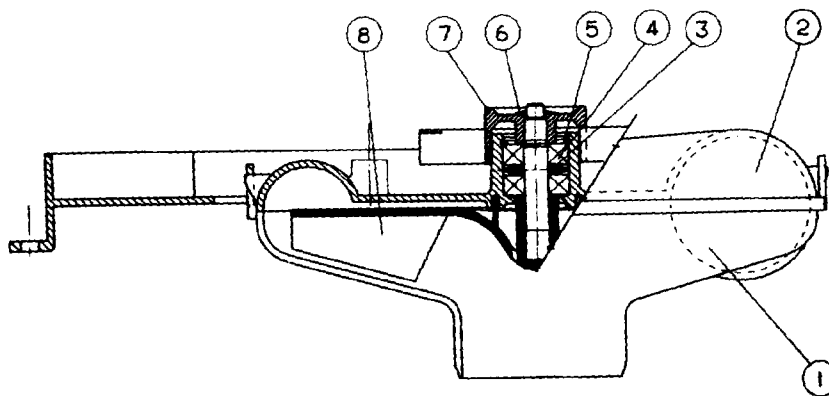
During the last few minutes of the drying cycle, the heaters are switched off, while the fan continues to operate until the cooling phase is completed.

FAN



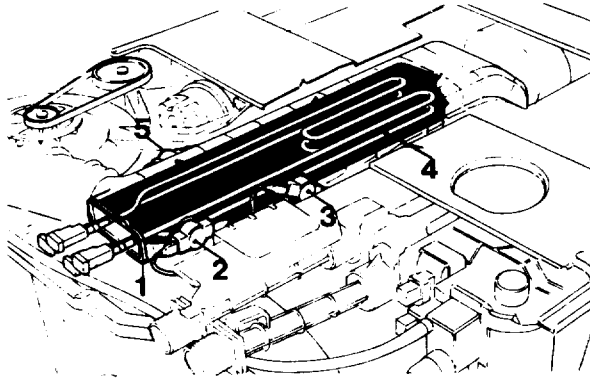
- 1. Fan assembly
- 2. Fan motor
- 3. Belt

The fan ducts the air from the condenser to the heater casing.
The fan is actioned by the fan motor and driven by a V-belt.



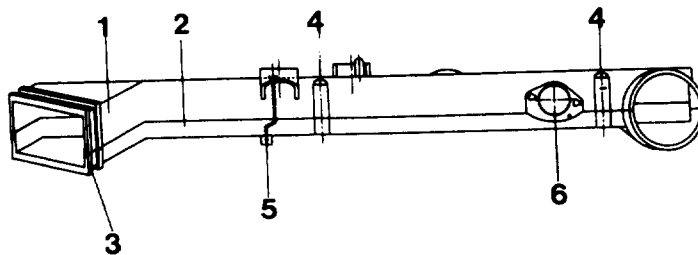
- 1. Cover
- 2. Ventilation scroll
- 3. Pin
- 4. Bearing
- 5. Seeger ring
- 6. Pin lock
- 7. Driven pulley
- 8. Fan

HEATER CASING



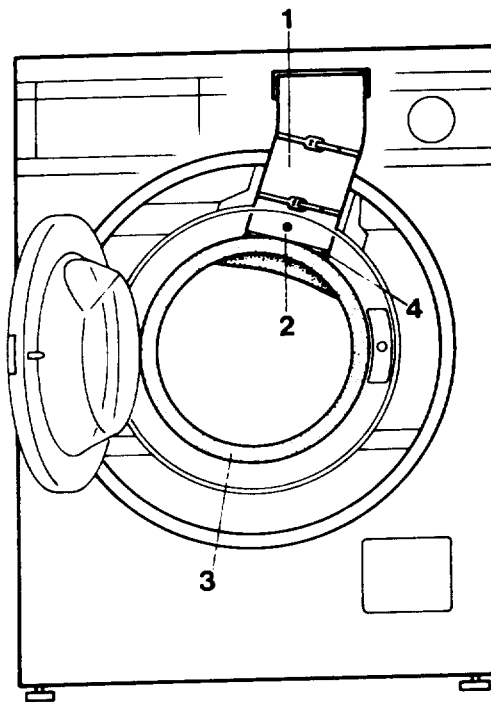
1. Casing
2. Manual-reset thermostat
3. Drying thermostat
4. Drying heater
5. Safety thermostat

The heater casing consists of two half-shells constructed in aluminium alloy. The two shells are fastened together by screws and sealed with a silicone-based sealant. The casing is insulated by two shells in rockwool which are covered in aluminium foil and held in position by two fastening bands. The air is heated by two heating elements. When the delicate drying cycle is selected, one of the heating elements is switched off. The casing houses one functional thermostat and two safety thermostats.



1. Upper shell
2. Lower shell
3. Silicone seal
4. Fixing screws
5. Heating element pin
6. Thermostat housing

DUCT



1. Duct
2. Fixing screw
3. Bellows seal
4. Steel wire band

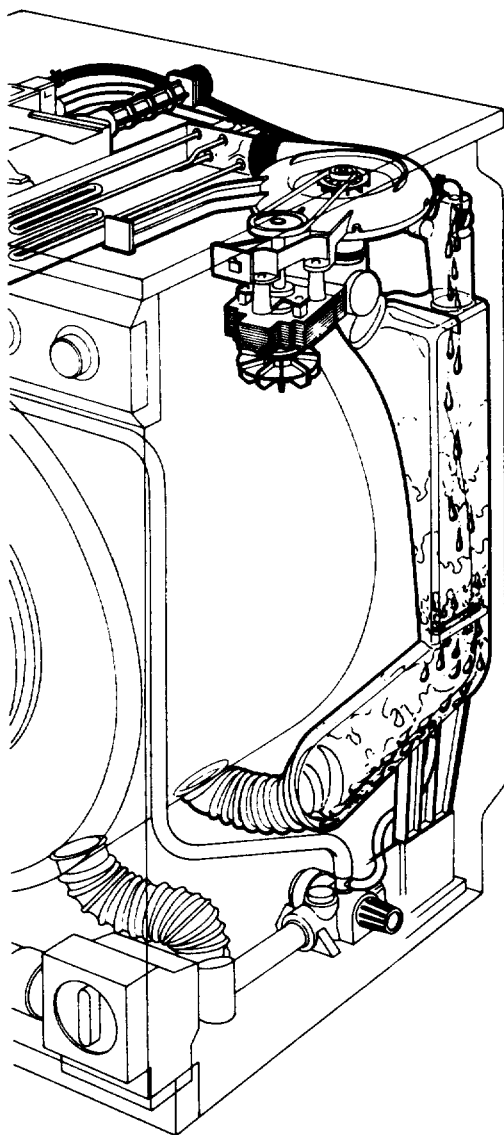
The front duct routes the warm air coming from the heaters through the bellows seal and directly into the drum.

The duct consists of two aluminium alloy tubes which are fastened together by screws and sealed with silicone.

The duct, too, is insulated by two layers of rockwool covered in aluminium foil and held in position by two fastening bands.

The duct is fastened to the front casing by a screw. A steel wire band is used to fasten the duct to the bellows seal.

DRYING CONDENSER



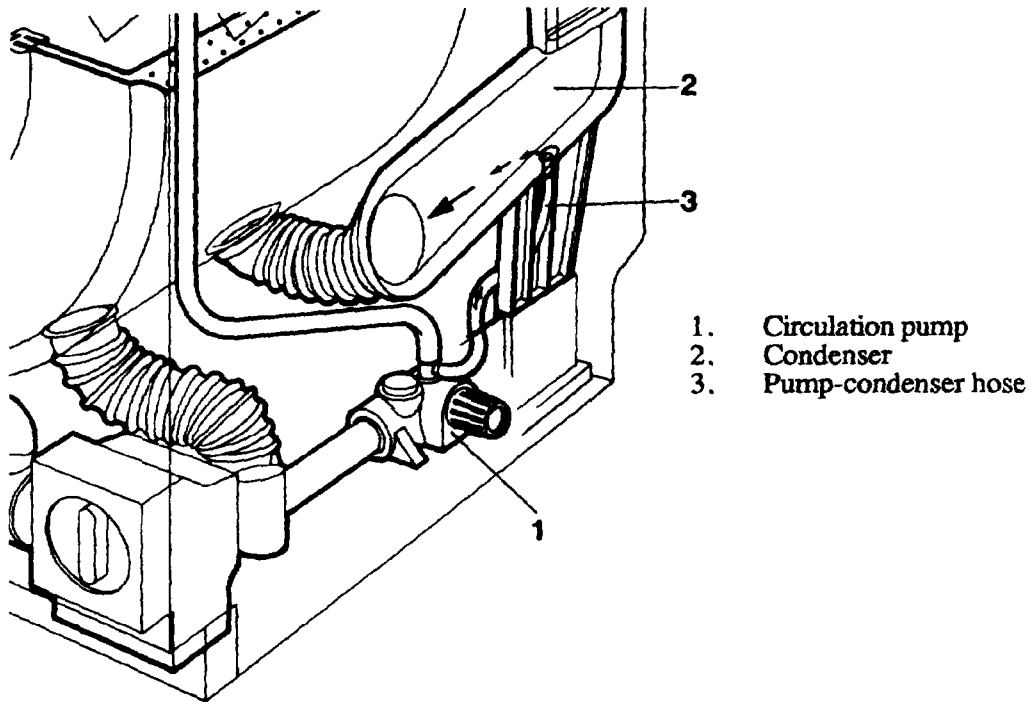
The drying condenser consists of a plastic body which is fixed to the base of the appliance. The bottom end of the condenser is connected to the tub by means of a rubber hose coupling. The upper extremity is connected to the fan by a gasket.

The humid air enters the lower end of the condenser, while a jet of cold water is introduced from the upper end.

The shape of the condenser is designed to create a turbulence between the flow of humid air and the jet of cold water. This causes the humidity in the air to condense; as a result, the fan receives cold, dry air, which is then re-circulated and passed through the heaters.

The cooling water and condensation fall to the bottom of the tub and are drained off by the discharge pump.

Condenser "self-cleaning" process



During drying, the fluff suspended in the water tends to accumulate in the bottom of the condenser.

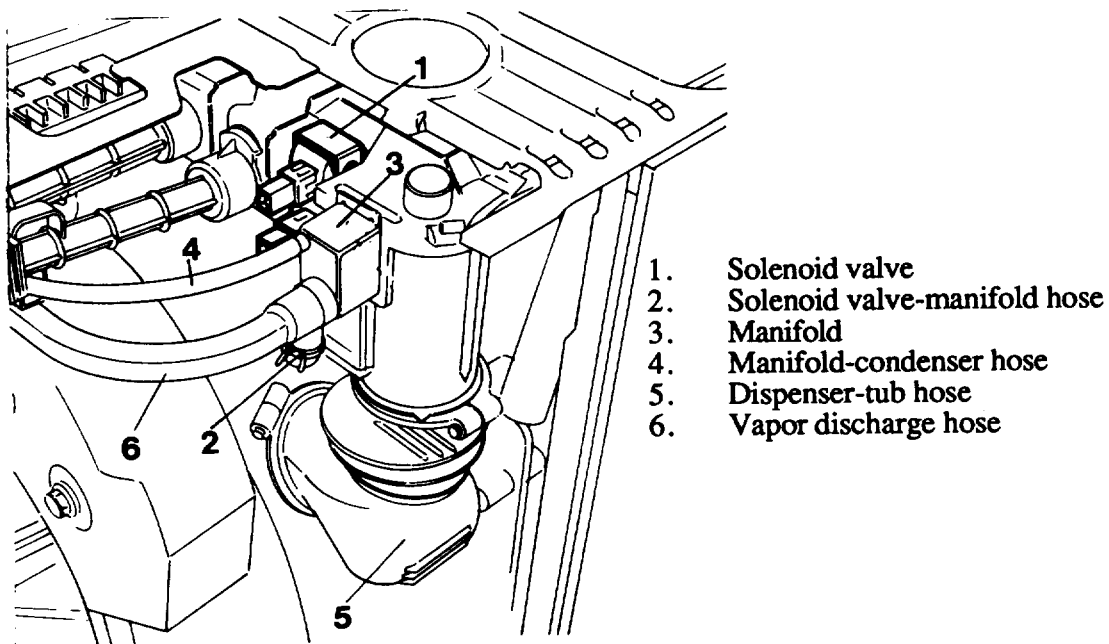
Jetsystem washing machines are fitted with a hose which connects the circulation pump to the condenser. During the washing cycles, therefore, water flows constantly between the condenser and the tub, and fluff is therefore carried to the condenser. During the discharge phase, the fluff is deposited on the discharge filter.

This system effectively prevents the fluff from blocking the drying circuit.

In traditional washing machines, the water flows automatically into the condenser, as the water intake during the wash cycle takes place at a higher level. In this case, too, the fluff suspended in the water is then discharged.

Regular cleaning of the filter is extremely important.

HYDRAULIC DRYING CIRCUIT



The condensation water is loaded by a section of the cold water solenoid valve, which has a delivery of about 0.4 litres per minute.

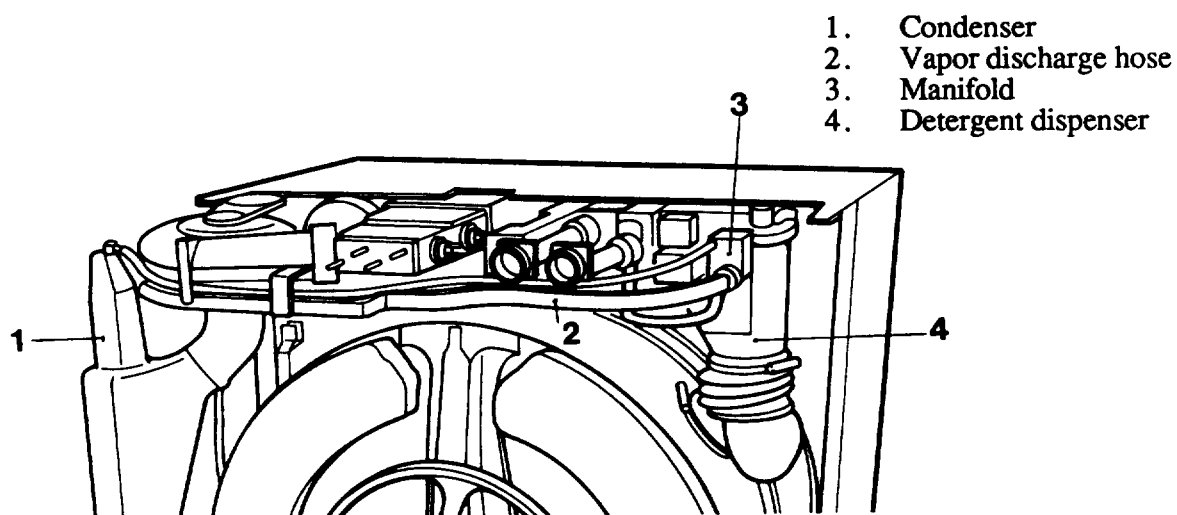
The solenoid valve is connected by a hose to a manifold; a narrow tube then routes the water from the manifold to the upper section of the condenser.

A small hole inside the manifold introduces a very small quantity of water into the detergent dispenser.

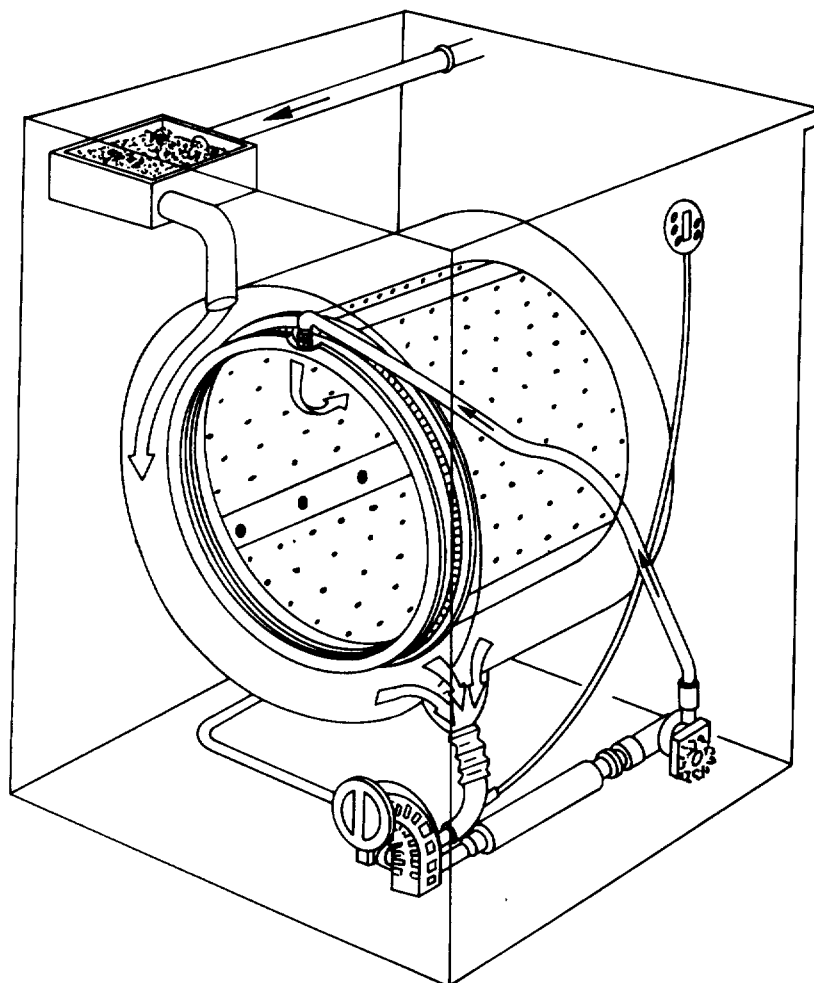
In this way, there is always water in the siphon of the tube which connects the detergent dispenser to the tub, thus preventing vapor from escaping from the tub and the detergent dispenser during drying.

Vapor discharge hose

A plastic hose between the condenser to the manifold ducts the vapor which builds up during the heating process in the wash phases into the detergent dispenser. This vapor condenses as it comes into contact with the internal walls of the detergent dispenser.



JETSYSTEM "DIRECT SPRAY" WASHING SYSTEM



Jetsystem models feature the "direct spray" system, in which the water is introduced directly into the tub through a duct in the upper section of the bellows seal. In this way, the water goes directly to the washing without passing through the drum perforations as in the original Jetsystem washing machines. However, the basic principles of operation remain unaltered. This system reduces the dispersion of water and heat.

**DRYING CIRCUIT:
ELECTRICAL COMPONENTS**

TIMER

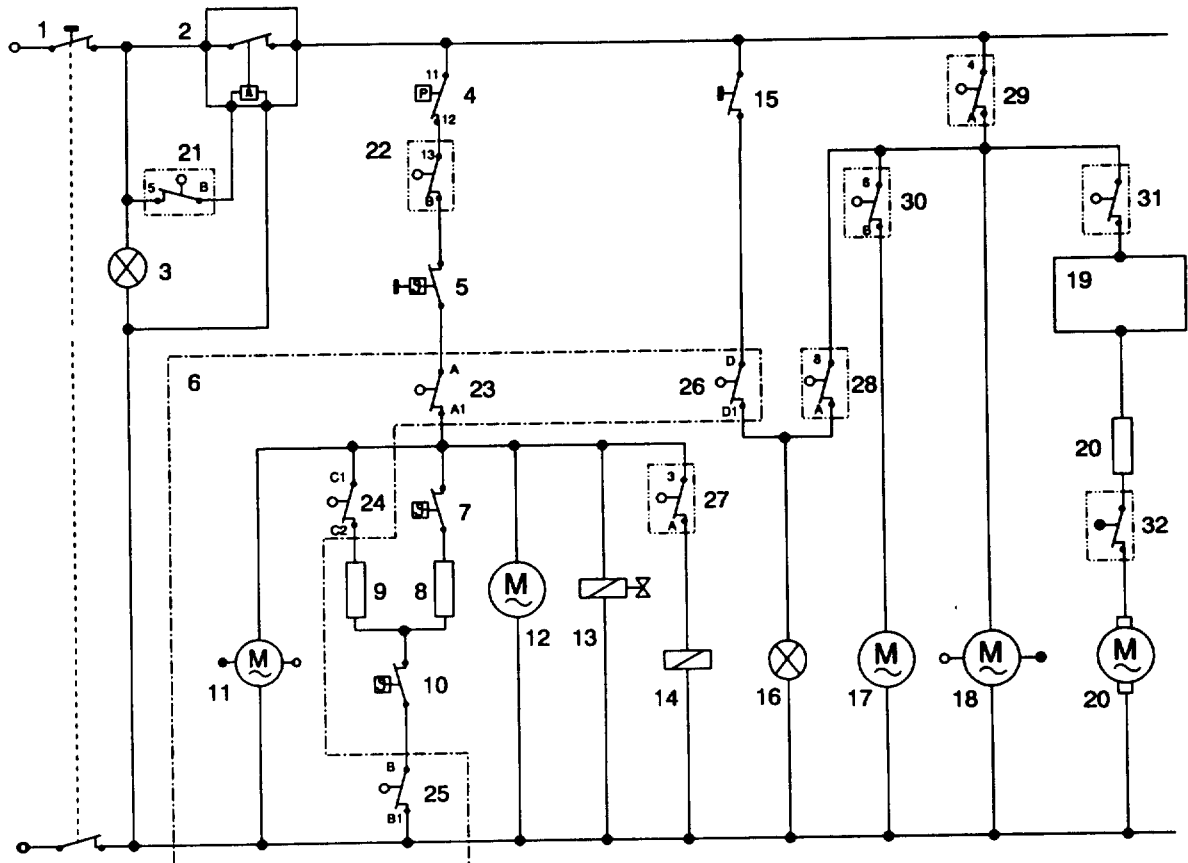
Two types of timers are fitted to these washer-dryers:

- a. Conventional timers connected to a simple timing device which governs the drying time. The timing device controls the electromagnet of the timer's thermostop device so that it is maintained in operation during the drying phase.
- b. Timers with built-in timing devices. This type of timer features two knobs. The first knob sets the cycles; the second selects the drying time.

The following pages show two examples illustrating the operation of the timers during the drying phases.

TIMERS WITH TIMING DEVICES: OPERATING DIAGRAM (DRYING PHASE)

P255



1. Main switch
2. Door delay
3. Pilot light
4. Pressure switch
5. Manual-reset thermostat
6. Timer
7. Drying thermostat
8. Drying heater
9. Drying heater
10. Safety thermostat
11. Timing device motor
12. Fan motor
13. Condensation solenoid valve
14. Thermostop electromagnet
15. Automatic drying button
16. Drying pilot light
17. Discharge pump
18. Timer motor
19. Electronic speed control
20. Commutator motor

TIMER/TIMING DEVICE CONTACTS

21. Door delay
22. Drying
23. Timing device power supply
24. Energetic heating
25. Heating
26. Automatic drying
27. Drying thermostop
28. Automatic drying
29. Direct timer power supply
30. Discharge pump
31. Motor/control signals
32. Reverser

When the drying cycle and drying time are selected and the main switch (1) is pressed, the door delay device (2) is powered via the door delay contact (21), and all the components in the appliance are powered.

The main pilot lamp (3) and the drying pilot lamp (16), which receives its signal from timer contact (28), light immediately.

The power supply to the drying circuit and the timing device motor (11) is received via the contact of the pressure switch (4) in the "empty" position, via timer contact (22), via contact (23) of the timing device; the power supply is controlled by the manual-reset thermostat (5).

One branch of the drying heater (9) is powered by contact (24) of the timing device; the other is controlled by the drying thermostat (7).

The circuit is completed by the safety thermostat (10) and contact (25) of the timing device.

The fan motor (12), condensation solenoid (13), thermostop electromagnet (14) and timing device motor (11) are powered at the same time as the heating elements. The timer motor is powered by contact (29) which also provides the power supply for the electronic speed control (19) of the motor (20); operation of the motor is governed by the various motor speed selection contacts and reversers (31-32).

The discharge pump is powered by timer contact (30).

The timer remains in the drying position, since the coil of the thermostop (14) prevents its advance.

When energetic drying is selected, both branches of the heating element are switched on. During delicate drying, contact (24) of the timing device is open, thus switching off one branch of the heating element (9). Each heating element absorbs 700W.

The drying thermostat (7), which is normally closed, is set to open the contact at 106°C and to reclose the contact at 90°C. This thermostat is designed to control the heating of the resistances during the drying phase, especially when the user selects excessively long drying times and when the power supply voltage is abnormally high.

The safety thermostat (10), which is normally closed, opens at 98°C and recloses at 75°C. This thermostat is positioned further away from the heating element than the drying thermostat, and intervenes if a malfunction occurs in one of the components of the electric fan, if the belt breaks, if the drying thermostat (7) malfunctions, if the water supply is closed, etc.

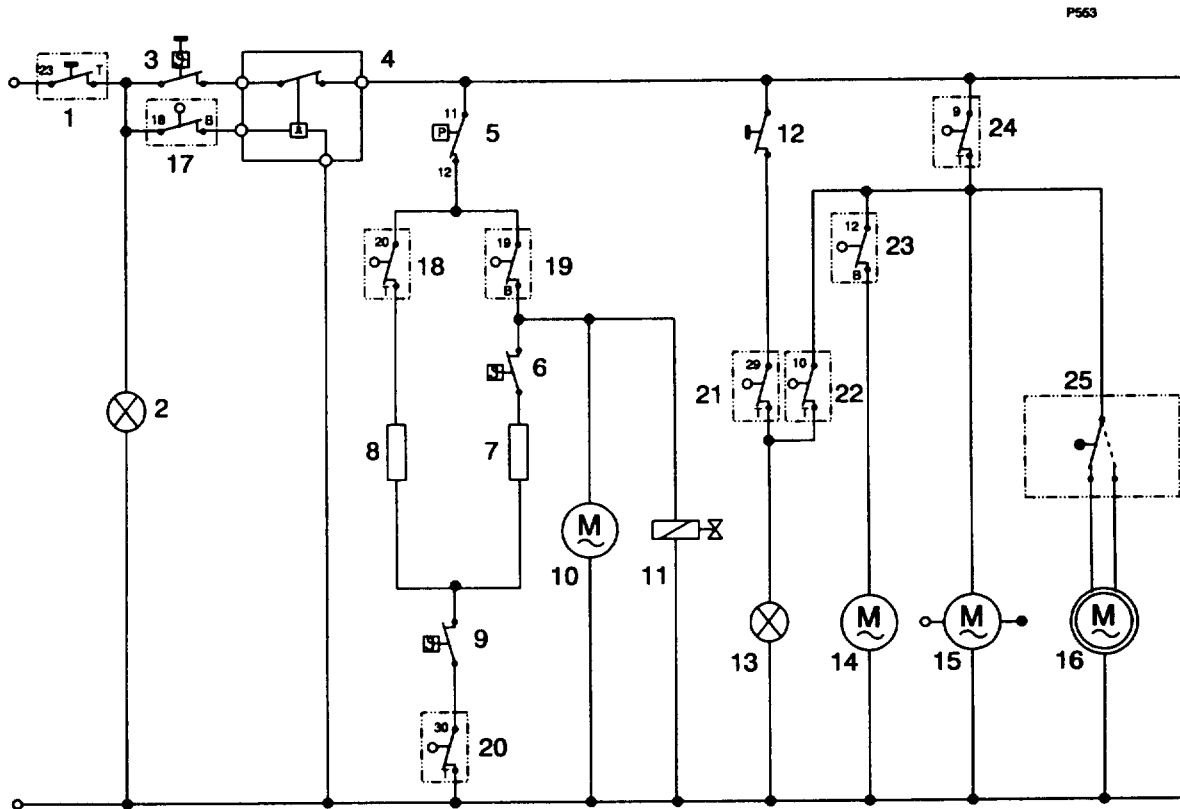
Eight to ten minutes before the end of the drying cycle, the timing device opens contact (25) and switches off the heating elements. However, the fan continues to operate until the cooling phase is completed.

When the timer reaches the end of the cycle (stop), contacts (23) open, thus disconnecting the coil of the thermostop; this allows the timer to advance to the stop position within two minutes.

The manual-reset thermostat (5) intervenes only if the safety thermostat (10) malfunctions and, simultaneously, one of the ventilation components breaks down. This thermostat is normally closed, opening at 150°C to disconnect the drying circuit and the electromagnet of the timer's thermostop, which as a result passes to the stop position.

When the user desires to select automatic drying at the end of the washing cycle, it is necessary to press the automatic drying button (15) which, via contact (26) of the timing device and contact (28) of the timer, automatically causes the timer to skip the stop immediately preceding the drying phase.

DUAL-KNOB TIMER: OPERATING DIAGRAM (DRYING PHASE)



1. Main switch
2. Pilot light
3. Manual-reset thermostat
4. Door delay
5. Pressure switch
6. Drying thermostat
7. Drying heater
8. Drying heater
9. Safety thermostat
10. Fan motor
11. Condensation solenoid valve
12. Automatic drying button
13. Drying pilot light
14. Discharge pump
15. Timer motor
16. Motor

TIMER/TIMING DEVICE CONTACTS

17. Door delay
18. Energetic heating
19. Heating
20. Heater timing device
21. Automatic drying
22. Automatic drying
23. Discharge pump
24. Direct timer power supply
25. Reversers

In this type of timer, the duration of the drying cycle is determined by the timer knob. When the drying cycle and drying time have been set and the main switch (1) pressed, the door delay device (4) is powered via contact (17) and the manual-reset thermostat (3), and all the components in the appliance are powered. The main pilot lamp (2) and the drying pilot lamp (13) light immediately.

The power supply to the drying circuit is received via the contact of the pressure switch (5) in the "empty" position. The heating element (7), the fan (10) and the condensation solenoid (11) are powered by contact (19) of the timer. The other heating element (8) is powered by contact (18) of the timer and switched on when energetic drying is selected. Heating is governed by the drying thermostat (6), the safety thermostat (9) and contact (20) of the timer. Each heating element absorbs 700W.

The fan (10) and the condensation solenoid (11) are powered at the same time as the drying heaters.

The timer motor is powered by contact (24), which also provides the power supply for the motor (16); operation of the motor is governed by the various reverser contacts (25).

The discharge pump (14) is powered by contact (23) of the timer.

In this case, too, the drying thermostat (6), which is normally closed, is set to open the contact at 106°C and to reclose the contact at 90°C; the safety thermostat (9) is set to open at 98°C and to reclose at 75°C. The manual-reset thermostat (3) is normally closed, and opens at 150°C, thus disconnecting the entire appliance from the power supply. This thermostat intervenes only in the case of a simultaneous fault in the safety thermostat (9) and any of the other components of the ventilation circuit.

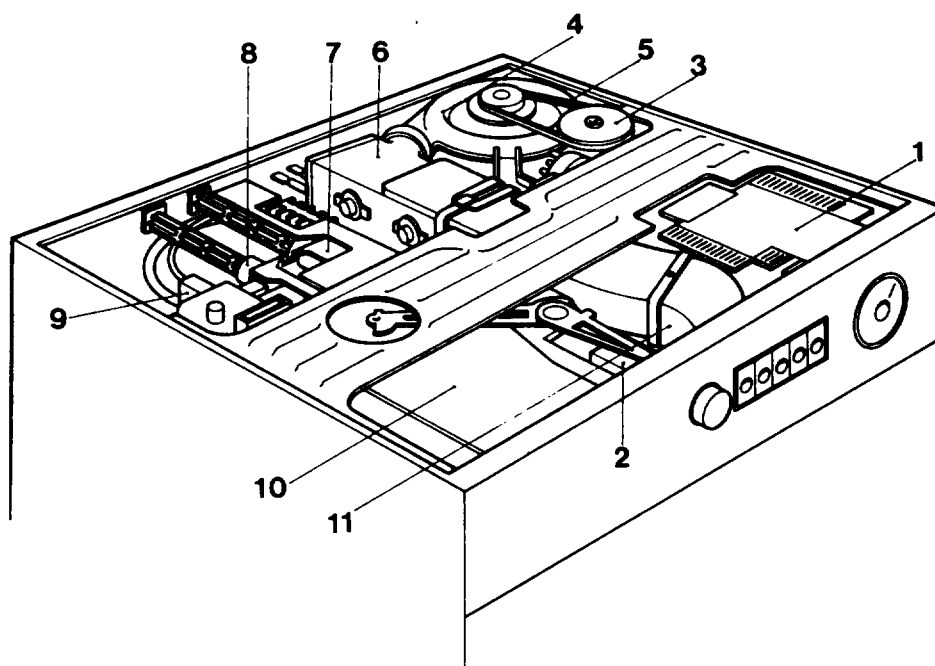
Eight to ten minutes before the end of the drying cycle, timer contact (20) opens and switches off the heating elements. However, the fan continues to operate until the cooling phase is completed.

At the end of the drying cycle, the timer advances to the stop position.

When the user desires to select automatic drying at the end of the washing cycle, it is necessary to press the automatic drying button (12) which, via timer contacts (21) and (22), automatically causes the timer to skip the stop immediately preceding the drying phase.

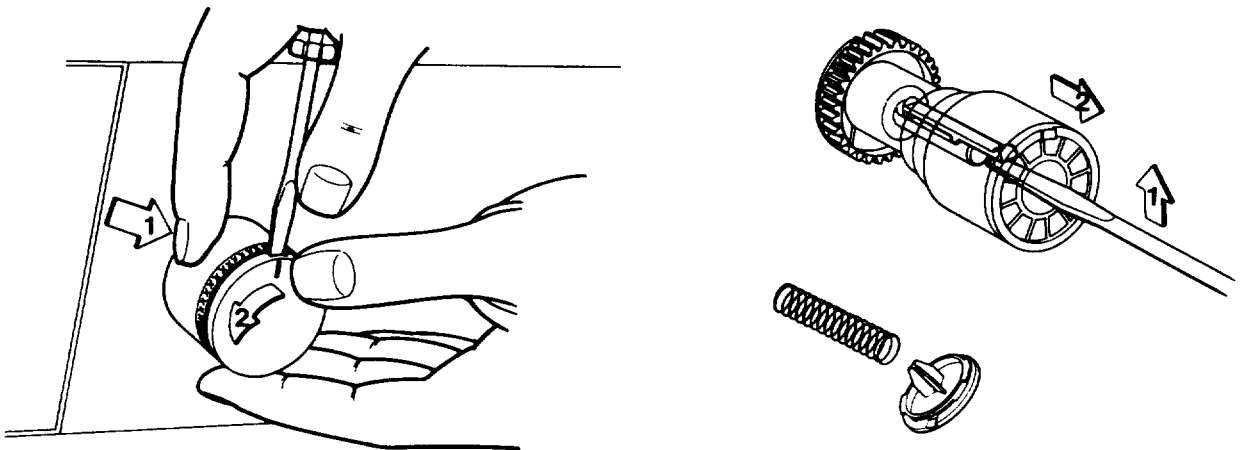
ACCESS TO COMPONENTS
REPAIR PROCEDURES

ACCESS FROM THE TOP



1. Timer
2. Timing device
3. Fan motor
4. Fan
5. Belt
6. Heater casing
7. Hot water solenoid
8. Cold water solenoid
9. Manifold
10. Detergent dispenser
11. Duct

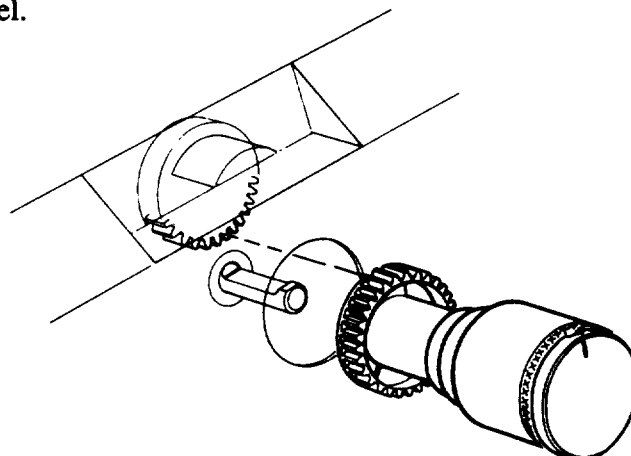
1. **COVER:**
Remove the two rear screws, push the top towards the rear of the appliance and remove from the cabinet. This gives access to:
2. **TIMER**
3. **ADJUSTABLE THERMOSTAT** (if fitted)
4. **PUSHBUTTONS**
5. **FAN BELT**
6. **DRYING TIMER:**
 - a) Use a small screwdriver or a blade to lever off the knob cover.



- b) Lift the locking tab which fastens the knob to the spindle and remove the knob assembly
- c) Detach the mechanism from the detergent dispenser
- d) Remove the two screws which fasten the timer to the timer support
- e) Remove the connectors
- f) Slide the timing device out

Replacing the knob

Replace the spring and the knob cover before refitting the knob assembly. Check that the knob is correctly aligned with the indicator window inside the control panel.



7. **SOLENOID**

- a) Remove the intake hose.
- b) Remove the screw from the contact board support and remove the bracket which fastens the solenoid to the dispenser.
- c) Remove the screw and detach the rear wire clamp.
- d) Detach the hoses from the manifold.
- e) Remove the solenoid-duct assembly from the dispenser and remove the connectors.
- f) Remove the hose that connects the solenoid and the manifold.
- g) Remove the solenoid from the manifold.

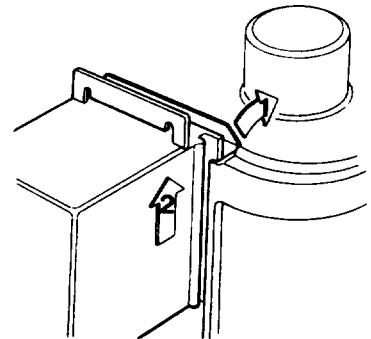
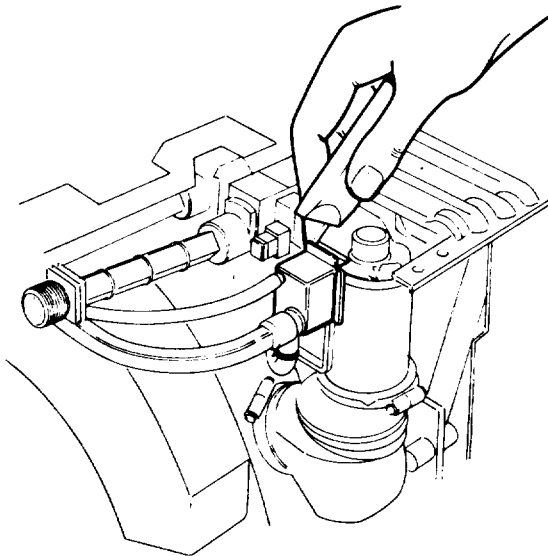
Replacing the solenoid

Fit the sealing gasket before replacing the solenoid.

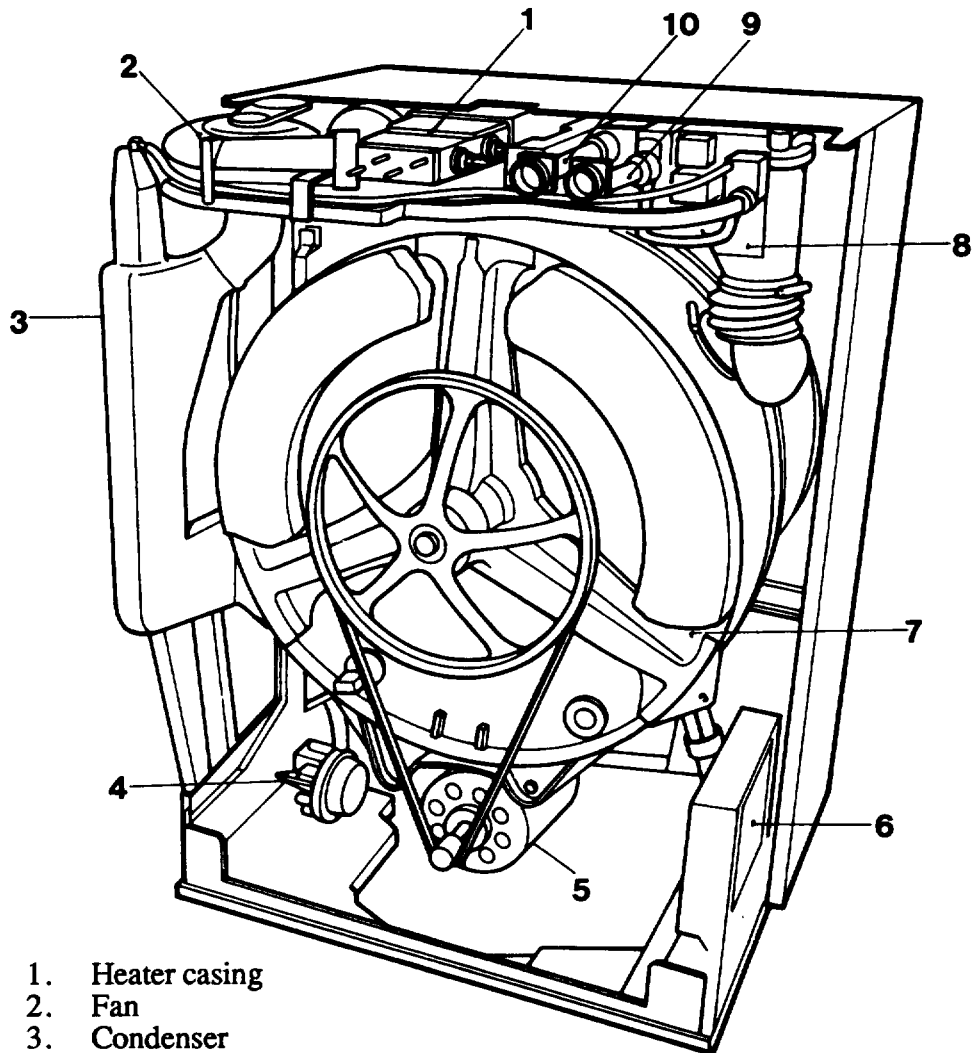
8. **MANIFOLD**

Access to the manifold between the drying solenoid and the dispenser may be gained by dismantling the detergent dispenser or by following the procedure outlined below:

- a) Use a sharp blade to cut the duct on two sides as shown in the figure.
- b) Remove the manifold from the dispenser.



ACCESS FROM THE REAR SHELL

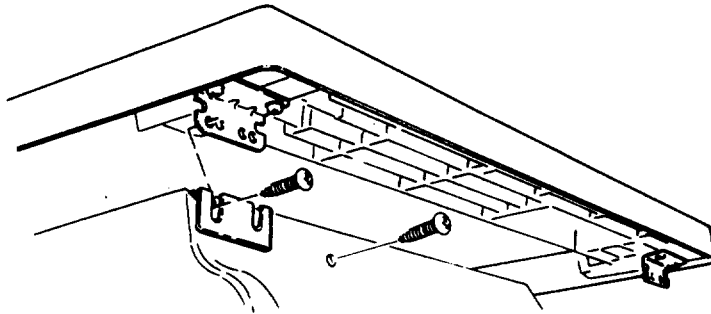


1. Heater casing
2. Fan
3. Condenser
4. Circulation pump
5. Motor
6. Electronic speed control
7. Tub
8. Detergent dispenser
9. Cold water and condensation solenoid
10. Hot water solenoid

N.B. After removing the rear shell, care must be taken when moving the appliance. When the rear shell is removed, the appliance must never be laid on its side or on the rear, as this might seriously damage the internal structure.

1. REAR CABINET SHELL

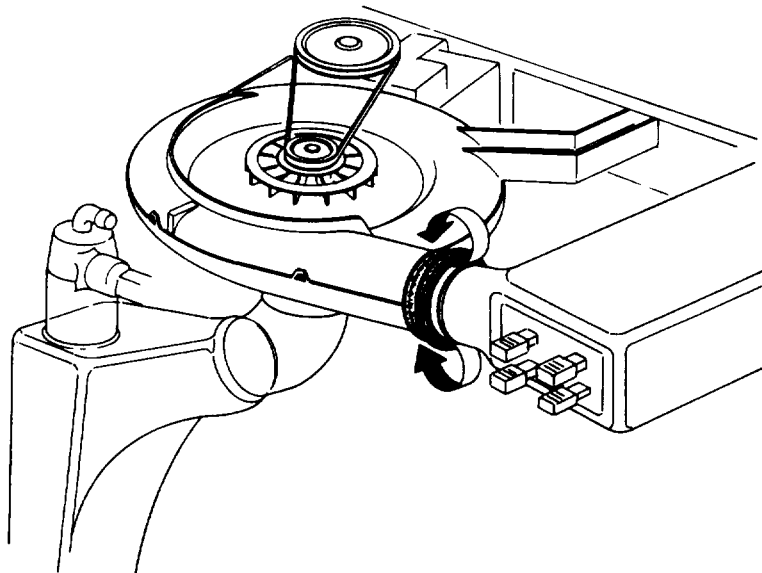
- a) Remove the top.
- b) Remove the screws which fasten the shell to the base.
- c) Remove the screws which fasten the shell to the fan.



This gives access to:

2. FAN ASSEMBLY

- a) Remove the screws which fasten the fan assembly to the cross-brace.
- b) Fold back the coupling gasket between the fan and the heating elements.



- c) Lift the fan from the condenser.
- d) Detach the manifold.

Replacing the fan assembly:
Reposition the O-ring seal on the fan.

This gives access to:

3. FAN MOTOR

- a) Remove the three fixing screws.

4. CONDENSER

- a) Disconnect the hoses from the condenser.
- b) Push the condenser upwards and remove from the base.

5. HEATER CASING

- a) Detach the connectors from the heater and the thermostats
- b) Fold back the fan coupling gasket
- c) Remove the screws which fasten the casing to the duct and the two screws which fasten the casing to the cross-piece.
- d) Remove the casing

This gives access to all the thermostats.

6. DRYING AND SAFETY THERMOSTATS

- a) Remove the casing from the washing machine.
- b) Remove the screws which fasten the thermostat to the casing and remove the thermostat.

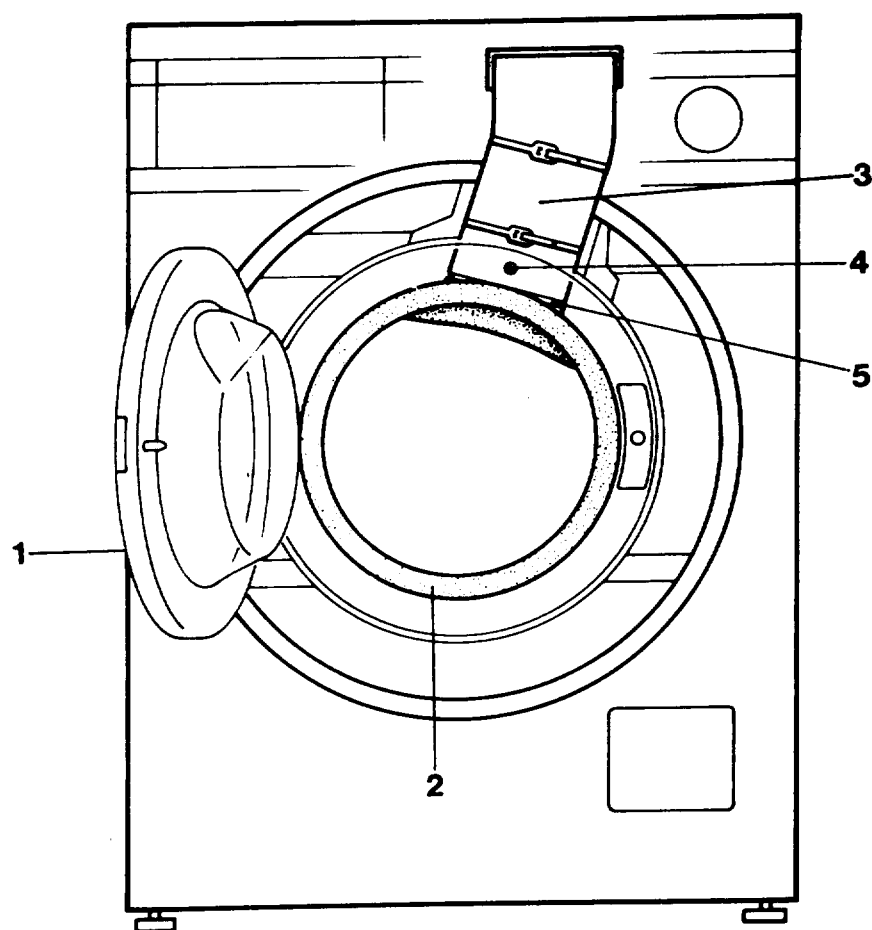
7. DRYING HEATER

- a) Detach the connectors
- b) Remove the two screws which fasten the heating element to the casing
- c) Remove the heating element

Replacing the heating element

When inserting the heating element, ensure that it is positioned correctly on the support inside the casing.

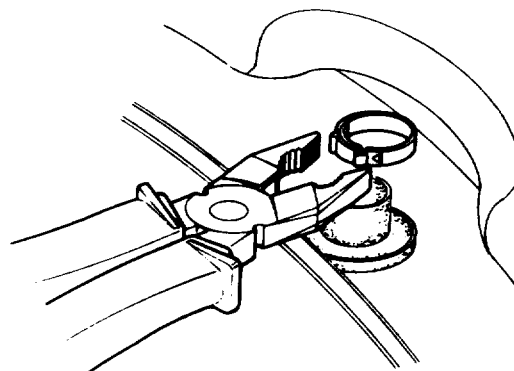
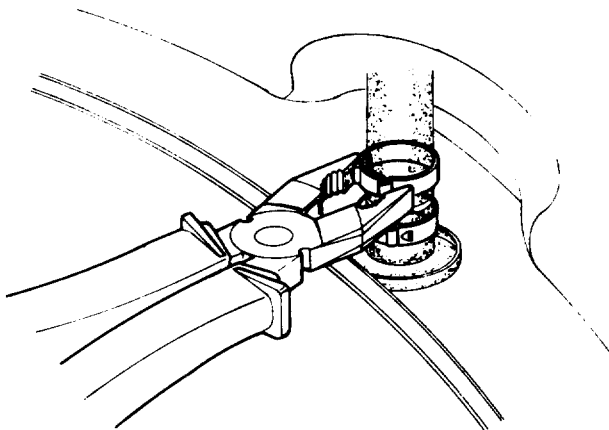
ACCESS FROM THE PORTHOLE DOOR



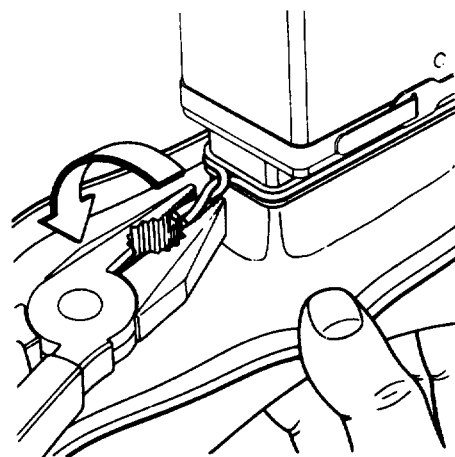
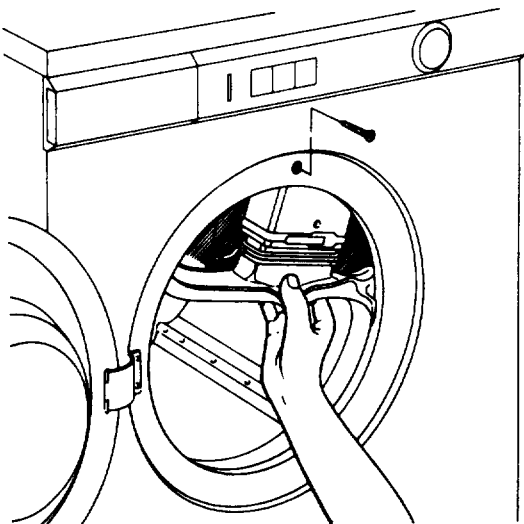
1. Door
2. Bellows seal
3. Duct
4. Fixing screw
5. Wire clamp

1. BELLOWS SEAL AND DUCT

- a) Remove the top
- b) Remove the screws which fasten the duct to the heater casing
- c) Open the door and remove the screw which fastens the duct to the cabinet
- d) Remove the bellows from its surround
- e) Detach the circulation hose from the gasket (Jetsystem models only).



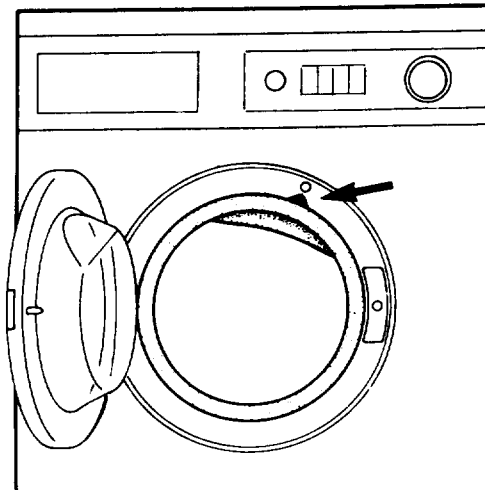
- f) Remove the wire clamp which fastens the bellows to the duct and detach the gasket.



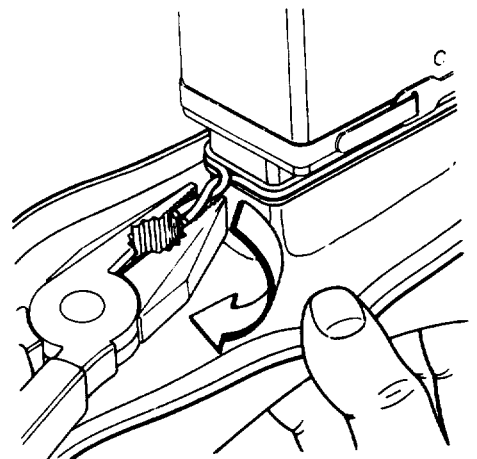
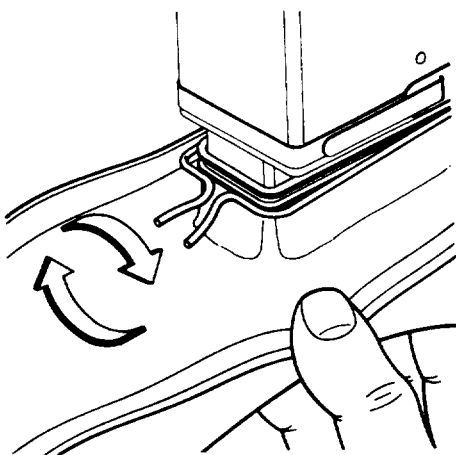
- g) Remove the bellows seal and the ring by pulling downwards

Replacing the bellows seal:

- a) When replacing the bellows seal, ensure that the reference mark is aligned with the hole for the screw which fastens the duct to the panel.

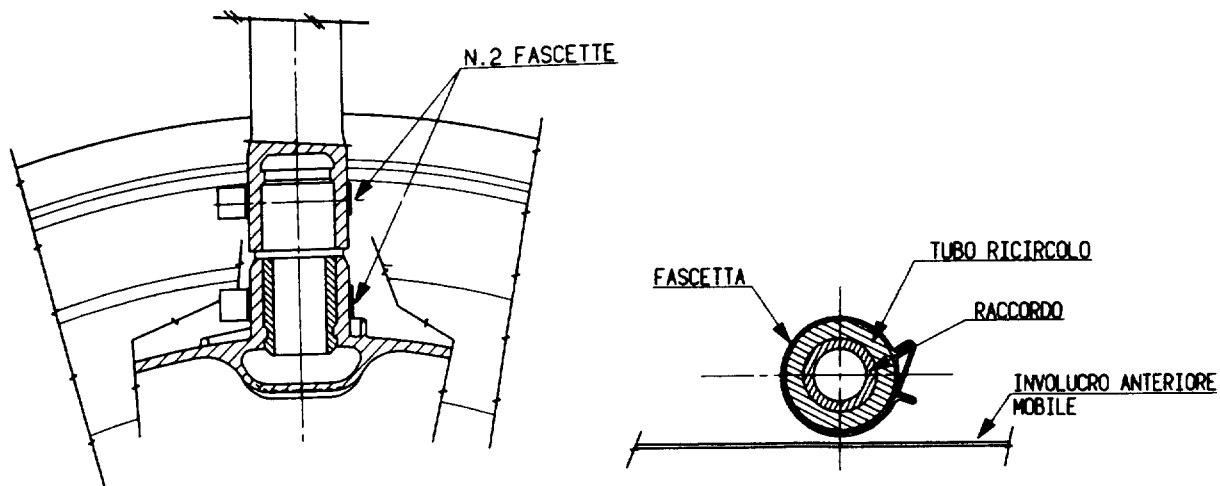


- b) When replacing the wire clamp, check that it is correctly positioned in the seat of the bellows seal, then proceed as shown in the figure.

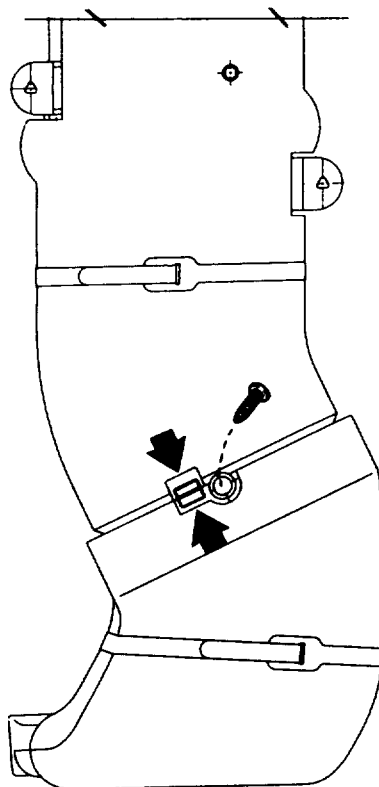


N.B. If a new bellows seal is fitted, lubricate the external surface (i.e. the part that comes into contact with the porthole door) using silicone oil, in order to ensure that the seal does not stick to the door during the first few drying cycles.

- c) The clamp used to fasten the circulation hose (if fitted) should be positioned as shown in the figure.



- d) Fit the duct to the heater casing. Use pliers to align the two tabs, as shown in the figure.



- e) Replace the screws which fasten the duct to the cabinet.